UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/775,653	02/05/2001	Yuuichi Tachino	1076.1063 (JDH)	9294

21171 7590 09/25/2002

STAAS & HALSEY LLP
700 11TH STREET, NW
SUITE 500
WASHINGTON, DC 20001

EXAMINER	
CROWELL, ANNA M	
ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 09/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/775,653	Applicant(s) TACHINO ET AL.	
	Examiner Michelle Crowell	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 September 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *1,4-6,8,9,12,15,16,19 and 20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2,3,7,10,11,13,14,17 and 18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Claims 1, 4-6, 8, 9, 12, 15, 16, 19 and 20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. In addition, claim 1 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention. Election was made **without** traverse in Paper No. 5.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 2, 7, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Takagi (Japanese Patent Publication 10-302997).

Referring to Drawing 6 and 7, and paragraphs [0027]-[0038], Takagi discloses a plasma treatment device comprising a discharge container (cylindrical reaction tube) consisting of a power introducing window 12 and an electrode 13, 1st antenna 18 and 2nd antenna 19 (high frequency antenna), a cylinder 20 (drive mechanism), and a vacuum container 11 (processing chamber). The power introduction window 12 is made of quartz (dielectric material) and both antennae are located around the reaction tube. The 1st antenna 18 (power supply terminal) is connected to a power supply which is not shown [0031], and the electrode 13 (ground terminal) is held at a ground potential [0028]. During the cleaning (etching) process, 1st and 2nd antenna

are electrically coupled and therefore the power combination between the antenna and the plasma create capacitive coupling. The cylinder 20 controls the movement of the 2nd antenna 19.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3, 13, 14, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takagi (Japanese Patent Publication 10-302997) in view of Tepman et al. (U.S. 5,879,575) and Okumura et al. (U.S. 5,888,413).

Takagi fails to teach an antenna with a plurality of windings with a sloped segment connecting the windings, and a rotating drive mechanism.

Referring to Figures 5 and 6, column 6, lines 15-24, and column 7, lines 35-65, Tepman teaches an RF coil 150 (antenna) with multiple windings 152, 154, and 156. The RF coil 150 is mounted on a coil support 270 (intermediate segment which is sloped or inclined), and the coil support 270 connects the various windings. In addition, the coil support 270 is located closer to an outer peripheral surface of the reactor 240 (reaction tube) than the RF coil 150. The RF coil 150 is connected to ground at winding 152 and connected to a power supply source at 170. Both the RF coil 150 and the coil support 270 rotate around the reactor ceiling 100 by means of a connecting rod 310 (drive mechanism). When the RF coil is rotated around the reactor ceiling, the majority of the inner surface of the reactor vessel is cleaned. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the reaction tube

of Takagi with the rotating coil with a plurality of windings as taught by Tepman. This rotating coil allows the inner surface of the reaction tube to be thoroughly cleaned.

6. Claims 10 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takagi (Japanese Patent Publication 10-302997) in view of Tepman et al. (U.S. 5,879,575) as applied to claims 2, 3, 7, 11, 13, 14, and 8 above, and further in view of and Okumura et al. (U.S. 5,888,413).

Takagi in view of Tepman fails to teach a controller.

Referring to Figures 1 and 17, column 4, line 65-column 5, line5, and column 10, lines 5-10, Okumura teaches that it is known to use a controller 100 to control the rotational speed of a coil 1 by controlling the stepping motor 3 (rotary actuator-drive mechanism). The coil 1 is connected to a stepping motor 3 via rotary shaft 4. By controlling the rotational speed of the coil, a uniformed etch rate is created. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the rotational drive mechanism of Takagi in view of Tepman with the controller as taught by Okumura. This would create a uniformed etch rate.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Crowell whose telephone number is (703) 305-1956. The examiner can normally be reached on M-F (8:00 - 4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703) 308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

AMC
September 23, 2002

GREGORY MILLS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700